

Peter HEALEY, et al.
Serial No. 10/594,433
December 3, 2009

AMENDMENTS TO THE SPECIFICATION:

Page 1, immediately preceding paragraph [0001], insert the following heading and sub-heading:

BACKGROUND

1. Technical Field

Page 1, immediately preceding paragraph [0002], insert the following sub-heading:

2. Related Art

Page 1, paragraph [0003]:

[0003] According to the present exemplary embodiment invention, there is provided a method of evaluating the position of a time-varying disturbance on a transmission link, the method including the steps of: copying, at least in part, an output signal from a source, such that there is a pair of signal copies; transmitting the signal copies onto the transmission link; receiving from the transmission link at least partially returned signal copies previously transmitted thereon; combining the received signal copies of a transmitted pair so as to produce a combination signal; and, using a temporal characteristic in the combination signal to evaluate the position of the disturbance on the communications link.

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Page 4, immediately preceding paragraph [0018], insert the following heading:

BRIEF DESCRIPTION OF THE DRAWINGS

Page 5, immediately preceding line 5, insert the following heading:

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

Page 5, paragraph [0031]:

[0031] The monitoring station 12 includes an optical pulse source 18 with a short coherence time (random phase changes in the output providing an irregular component to the signal), the pulse source being driven by a driver unit [[118]]. Pulses from the optical source 18 are fed to an interferometer stage 20, here a Mach ~~Zehnder~~ Zhender interferometer with a first path 24 and a second path 26, the paths 24, 26 being coupled at each end by a respective first and second coupling stage 28, 30. For light travelling in the outbound direction, the first coupling stage 28 acts as a directional power (intensity) splitter, ~~channelling~~ channeling light from the optical source 18 to each of the paths 24, 26, the power to each path being shared in a predetermined manner (here, the first coupling stage acts as a 50:50 power splitter, although a different ratio could be used).

Page 6, paragraphs [0034]-[0035]:

[0034] The signal processing system includes: a photo-receiver 51 coupled to the first coupling stage 28 for converting optical signals into electrical signals; a filter 52 for receiving electrical signals from the photo-receiver 51 and filtering the electrical signals; a first signal processing unit 54 for processing the filtered electrical signals; and an optional further processing unit [[540]] for performing more detailed processing of the electrical signals. The filter 52 bandwidth (about 1 MHz) is matched to the expected signal bandwidth in order to minimise extraneous noise.

[0035] The photo receiver 51 is shown in more detail in FIG. 4. Light from the coupler 28 is incident on a photo transistor 702, here a PIN-FET, which produces an electrical output that is fed to a bipolar transistor 704, acting as a buffer, before being fed to a variable gain current feedback amplifier 706. The light source 18 may be a Light Emitting Diode, a source of amplified spontaneous emission such as an Erbium-Doped Fibre Amplifier, a Semiconductor Optical Amplifier, or a Super Luminescent Diode since this has a broad and smooth power spectrum and a short coherence time of about 0.5 ps or less. However, a Fabry-Perot Laser Diode is preferred, as described later with reference to FIGS. 5a and 5b.

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Page 9, paragraph [0044]:

[0044] In order to view the trace of FIG. 8a, the processing unit 54 includes a processor/memory circuit 55. The processor/memory circuit is connected to the driver [[118]] of the optical source 18, for accessing the electrical pulse signals which drive the source 18. The processor/memory circuit includes a timer unit 57 which indicates the elapsed time after the transmission of each pulse from the source, the timer unit being configured to reset using the pulse signals when a new optical pulse is launched. The processor/memory circuit 55 is connected to the bandpass amplifier 51 so as to ~~receive~~ receive the interference signal in the electrical domain, and to store the signal from each pulse as a function of elapsed time from the generation of the pulse. To store the interference signal as a function of time, the processor/memory circuit 55 is configured to sample the interference signal at intervals, and to store each sample with the associated return time. The stored interference signal can then be viewed on a viewing device 101. However, the interference signal may be stored temporarily, for example, through the ~~remnants~~ remnance of a cathode display.

Page 10, paragraph [0048]:

[0048] FIG. 2 shows a further signal processing unit 540. In a similar fashion to the first signal processing unit 54, the further signal processing unit 540 is suitable for evaluating, on the basis of Optical Time Domain Reflectometry (OTDR), the distance of

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one or more disturbances along the link 16. Although in FIG. 1 the further signal processing unit 540 is shown as an additional unit to the first processing unit 54, in practice just the further processing unit 540 may be implemented at the monitoring station.

Page 22, top of page: delete "CLAIMS" and insert the following heading:

WHAT IS CLAIMED IS: